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Prevalence of Syphilis Disease Throughout Some Expatriate Workers in Iraq

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انتشار مرض الزهري لدى العمالة الوافدين إلى العراق

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Abstract

Syphilis is a sexually transmitted infection caused by the spirochete *Treponema pallidum*. Syphilis has been a major infection in man throughout recorded history and has challenged clinicians with its many clinical manifestations. It can also spread to other people by kissing or close body contact. The disease begins with sores and then could spread to other parts of the body through its stages (primary, secondary, tertiary and latent stages) and can also reaches heart and nervous system and it may be fatal. The data on this disease in Iraq is limited and literatures are scanty. A total of 70 sera samples were collected from expatriates working in Iraq. Detection of syphilis antibodies were performed by non-treponemal tests and confirmed by treponemal tests (TPHA) using miniVIDAS device. Thirty percent of cases were positive for syphilis. We conclude that the syphilis cases are continuously increasing. A serious reaction must be taken immediately for assessing protective measures.

Keywords: Syphilis, STIs, Migration, Expatriates, *Treponema pallidum*



المستخلص

يعد مرض الزهري احد الإصابات المنقولة جنسياً والمسبب الرئيسي له البكتيريا اللولبية *Treponema pallidum*. هذا المرض من أهم الإصابات التي تحدث عند الإنسان وعلى مر التاريخ وقد تحدى الأطباء والعاملين في المجال الطبي بأعراضه السريرية العديدة. والزهري يمكن له الانتقال أيضاً من شخص إلى آخر عن طريق التقبيل أو الاحتكاك المباشر مع الشخص المصاب. ويبدأ هذا المرض بالظهور بشكل تقرحات والتي تنتشر إلى مناطق أخرى من الجسم حسب المراحل المختلفة (البدائية، الثانوية، الرباعية والكامنة) ويمكن أن تصل إلى القلب والجهاز العصبي المركزي وقد يكون قاتلاً. إن البيانات والمعلومات حول هذا المرض في العراق محدود والدراسات حوله غير كافية. في هذه الدراسة، تم جمع 70 عينة مصل الدم من العمالة الوافدين إلى العراق وتم تشخيص الاجسام المضادة للزهري باستخدام اختبارات غير مباشرة لـ *Treponema* وتم تأكيدها باختبارات مباشرة (TPHA) باستخدام جهاز miniVIDAS. ثلاثون بالمائة منها كان ايجابيا لهذا المرض. نستنتج ان حالات مرض الزهري في تزايد مستمر. وبسبب هذه النسبة المرتفعة، يتوجب على السلطات المحلية التحرك بصورة جادة لتقييم وتحديد الطرق الوقائية للحد من انتشار هذا المرض.

الكلمات المفتاحية : الزهري، الامراض المنقولة جنسياً، هجرة، العمالة الوافدة،

Treponema pallidum



Introduction

Syphilis is a sexually transmitted infection (STI) usually caused by the bacterium *Treponema pallidum* subspecies *pallidum*. Sexually transmitted infections are transmitted through chains of multiple sexual partnerships, and hence the configuration of these chains will influence the instant spread of STIs (La Fond and Lukehart, 2006).

South Africa has been ranked with the most highest levels of STIs and that is considered a major public health concern for their government, in 2007 the South African government introduced its first national strategic plan (NSP) for human immunodeficiency virus (HIV) and STIs and its latest plan for 2017–2022 includes STI interventions and targets (South African National AIDS Council, 2017). Sexually transmitted infections have been controlled by using standardized syndrome management guidelines approved since the mid-1990s (National Department of Health—Republic of South Africa, 2015). Those guidelines included the increased knowledge and awareness of reproductive and sexual health facilities such as encouragement of condom use, applying preventive activities, screening for syphilis during pregnancy, and carrying out national behavioral and social strategies for communication (Kularatne *et al.*, 2018).

Risk factors such as migration and mobility could increase high-risk sexual activities. Migration involves family separation, adaptation and a sense of obscurity leading to unsafe behavioral changes including early sexual relationships (Hesketh *et al.*, 2006), (Wang *et al.*, 2007), (Pandey *et al.*, 2008), (Roy *et al.*, 2010) and (Saggurti *et al.*, 2012).

The unsafe behaviors such as early sex with multiple partners with/without condom use will increase the spread of STIs (Abraído-Lanza



et al., 2005 : 55) and (Adam *et al.*, 2005 : 5). Few studies have outlined the risk of these behaviors and their prevalence among domestic workers and migrants, those workers who associate with migrants should be carefully viewed to clarify their susceptibility to unsafe behaviors (De *et al.*, 2007), (Latkin *et al.*, 2010) and Al Rifai *et al.*, 2015).

Other important routes of syphilis transmission involve vertical transmission (from mother to fetus), accidental inoculation and blood transfusion. Sero-prevalence in developing countries range from 0.5 to 94% according to data on various age and gender groups (Aziz *et al.*, 2016) and (Newman *et al.*, 2016).

Venereal syphilis is uncommon in Iraq and other countries in the region. Moreover, to our knowledge, little data is available on the prevalence of this infection in Iraq. At regular basis, testing of expatriates for transmittable diseases is required. This usually involves screening for infectious agents such as Hepatitis B, HIV, tuberculosis, and syphilis for all jobs and all age groups.

Syphilis diagnosis depends on the detection of specific antibodies to *Treponema pallidum*. The pathogenesis starts by inoculation of treponemes onto mucosa or skin during sexual contact. They either directly penetrate mucous membranes or enter through breaches in skin during sexual activity. Attachment onto host cells and extracellular matrix is an essential step of infection. Once below the epithelium, the spirochetes multiply locally and disseminate through the lymphatic's and the bloodstream. The flexible, flat-wave shape of *T. pallidum* facilitates its penetration into tissues and vascular barriers throughout the body, along with its periplasmic movement apparatus which propels it forward via front-to-back swing coordinated in response to poorly understood chemotactic signals. Reaching and living



in distal skin mucosal sites will allow for subsequent transmission though it is not identified how *T. pallidum* benefits by invading deep visceral and musculoskeletal tissues (Radolf *et al.*, 2016).

Expatriates identified as positive for syphilis are normally treated and are tested periodically for antibody presence (Aziz *et al.*, 2016). Iraq after 2003 witnessed a new era, and a radical political and economic shift aims to restore what was destroyed by successive wars, according to the mechanisms of transition to market system under the new constitution to opening the doors to foreign investment, and allowing investors in the use of non-Iraqi labor, as also allowed for expatriates to enter Iraq, and conduct business in economic activities in Iraq (Jamal and Hayder, 2018).

While information about STIs in Islamic countries is limited, no accurate / limited data is available on the prevalence and epidemiology of syphilis in Iraq. According to the latest WHO data published in 2017 syphilis death in Iraq reached to 166 or 0.09% of the total death. Thus, in the present study, we aimed to determine the prevalence and epidemiology of syphilis among expatriate workers applying for various jobs in Baghdad, Iraq.

Aim of the study

To detect the prevalence of syphilis diseases among some expatriates.

Materials and methods

A total of 70 blood samples were collected from patients of Kenyan, Bengali and Ethiopian nationalities admitted to a private labs in Baghdad, Iraq between August and December 2018.



Blood was centrifuged at 2500 rpm for 10 minutes and supernatant (serum) was taken to carry on the required tests. Detection of specific antibodies to syphilis was performed by both non-treponemal test using CTK Syphilis kit (USA), according to the manufacturer's recommendations and results were confirmed by treponemal tests *Treponema pallidum* hemagglutination (TPHA) using miniVIDAS device (Markos *et al.*, 2018).

Results

Out of 70 samples, the positive cases were seen in 21 cases (30%) while the negative cases were 49 (70%) as seen in Table 1. The gender of the positive cases included males 15 (71%) and females 6 (29%).

Table 1 Total and Percentages of Syphilis Disease

Total Number of cases	No. positive cases	No. negative cases	Male	Female
70	21 (30%)	49 (70%)	15 (71%)	6 (29%)

Discussion

The number of expatriates arriving to Iraq from different countries with sexual infections showed how much dangerous the spread of these infections. In this research, the percentage of positive syphilis patients admitted to a private labs in Baghdad was 30% and this is a high percentage and requires immediate action to be taken to limit their spread. This information about spread of syphilis is limited in Iraq and since they are known to work as janitors in schools, colleges, shopping centers, baby sitters, and coffee shops, more research should be conducted to assess protective measures and limit the spread of STIs.



A similar study in UAE has showed for the first time that the infection rate with *T. pallidum* was 51% (Aziz *et al.*, 2016). The highest rate of infection was observed in individuals from India 32/105 (30.5%), followed by Pakistan 27/105 (25.7%) and Bangladesh 16/105 (15.2%) (Makroo *et al.*, 2015).

An Egyptian study on the prevalence of syphilis antibodies in blood donors reported an overall prevalence of 13% (Hussein, 2014).

Due to lack of awareness and knowledge, there is always a high risk factor for exposure to infectious agents such as *T. pallidum* and HIV since the majority of the people tested come from low socioeconomic states of their original countries and might be uneducated (Aziz *et al.*, 2016).

In this study, there was some difficulties in identifying whether these expatriates arrived recently to the country or have been screened again for the STIs. Furthermore, there is an urgent need for further studies within the native Iraqi population before any conclusion can be made about expatriates transmitting STIs to the local community.

This study also emphasize the necessity of preventive measure for STIs, screening, diagnosis, and treatment. Moreover, it also gives attention to the strict follow up on the treatment regimens for people identified as syphilis positive to prevent spread of the disease. It is also important to educate the workers how to deal with such cases in their gatherings since most of them come from low self-esteem societies.

The present study provides for the first time the epidemiology and rate of infection with *T. pallidum* among expatriates in Iraq, providing policy makers with data which can be used to develop appropriate prevention and control strategies.



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